Bancroft District Fisheries Management Plan 1987-2000

Background Information and Optional Management Strategies and Tactics

A Summary

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Ontario

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TABLE OF CONTENTS

		PAGE
1.0	INTRODUCTION	
1.1	Purpose	1
1.2	Fisheries Management Planning Process	1
1.3	Detailed Background Report	2
2.0	BACKGROUND INFORMATION	
2.1	The Resource Base	2
2.1.1	Perspective	2
2.1.2	The Resource	4
2.2	Resource Use and Projections	4
2.3	Current Management Practices	6
2.3.1	Planning	7
2.3.2	Inventory and Assessment	7
2.3.3	Operations	7
2.3.4	Public Service	8
2.4	Supply/Demand Analysis and Target Refinement	8
2.5	Problems and Issues	10
3.0	OPTIONAL MANAGEMENT STRATEGIES AND TACTICS	
3.1	Introduction	13
3.2	Strategies and Tactics	13
4.0	PUBLIC REVIEW	26
5.0	APPENDICES	27

1.0 INTRODUCTION

1.1 Purpose

The Bancroft District Fisheries Management Plan is being prepared as a follow-up to the District Land Use Guidelines (D.L.U.G.), which were approved in 1983. The Guidelines established the general direction for the management of all resources in the District, including fisheries, and identified the long-term objectives and targets to be achieved. This Plan will identify the long-term management strategies for managing the fisheries resources of Bancroft District to the year 2000. It will identify specific management tactics to effect these strategies and will map out a specific short-term implementation schedule covering the first five years of the plan. On an annual basis, work plans will be developed from the priorities established on the implementation schedules.

This Summary of Background Information and Optional Management Strategies and Tactics has been prepared for public distribution. It summarizes and highlights information contained in a detailed background information document, and briefly outlines current problems and issues affecting the fisheries resource and its management. It identifies and evaluates various strategies and tactics for managing the resource and is provided to help solicit your input and opinion regarding potential management options.

Please review this report and provide your comments on the information it contains. Your views will be considered in the evaluation and selection of the preferred management actions.

1.2 Fisheries Management Planning Process

The development of the Fisheries Management Plan involves several stages which are summarized below:

(a) Terms of Reference - provides direction and a timetable for the completion of each stage of the process;

(b) Detailed Background Document - comprehensive examination of all available information pertaining to the management of the local fisheries resource;

(c) Summary of Background Information and Optional Management Strategies and Tactics - to assist in public review of planning process;

(d) Draft Plan - selection of preferred management options and further public review;

(e) Final Draft of Management Plan - to provide direction for local fisheries management to the year 2000.

1.3 Detailed Background Report

A detailed background report, which forms the basis for the information presented here, is available for review at the Bancroft District office and includes information regarding:

- The Resource
- Resource Use and Projections
- Target Testing
- Problems and Issues
- Present Management Practices
- Identification and Evaluation of Optional Management Strategies and Tactics

2.0 BACKGROUND INFORMATION

2.1 The Resource Base

2.1.1 Perspective

Bancroft District, one of the six administrative districts in the Algonquin Region, covers an area of 4,359 square kilometers or 1,683 square miles (Figure 1).

It lies predominantly on the Precambrian Shield and is part of the Northern Great Lakes/St. Lawrence watershed. Lakes and streams in the north half of the District drain eastward into the Ottawa River via the York, Little Mississippi and Madawaska Rivers. The remaining waters drain southward into the Trent River.

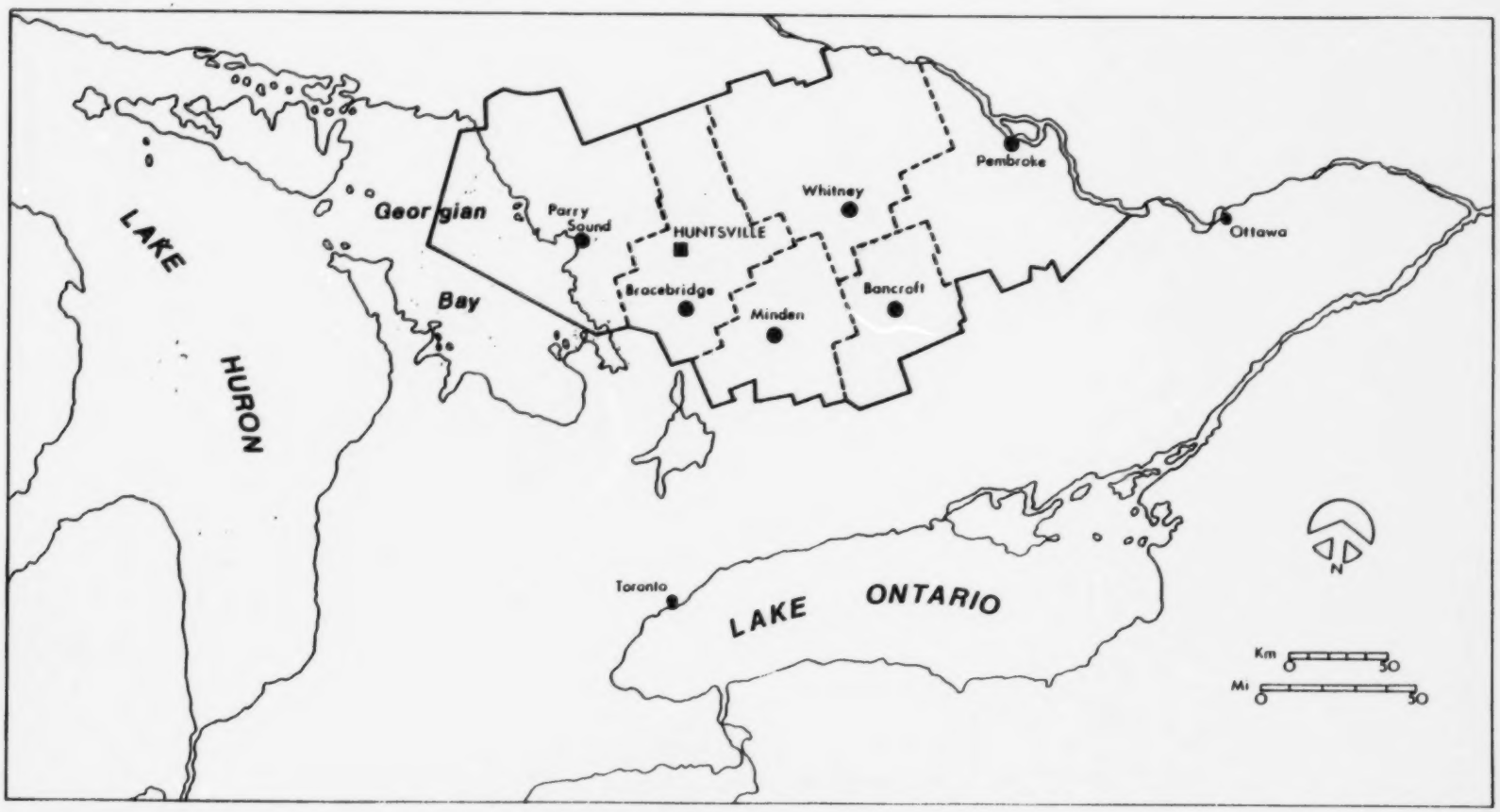
The broken landscape typical of Bancroft District contains numerous streams and small lakes. The shallow, sandy soils over Precambrian bedrock of granite are relatively unproductive. A band of quartzite or limestone running through the south-central portion of the District plays an important role in counteracting the effects of acid precipitation.

The resident population of Bancroft District is approximately 14,400, and is concentrated in the Village of Bancroft and surrounding small communities such as Cardiff, Maynooth, Apsley and Coe Hill. There is approximately a fifty percent split between crown and patent (private) land within the District.

FIGURE 1

REGIONAL SETTING

BANCROFT DISTRICT
ALGONQUIN REGION



There are 824 lakes and 97 rivers/streams in the Bancroft District. They cover 29,553 hectares (295 square kilometers), which represents approximately seven percent of the total District area. These waters provide a variety of sport fishing experiences. While lake trout, brook trout and rainbow trout (coldwater fisheries) attract the greatest proportion of angler interest, many waters offer fishing opportunities for bass, walleye, muskellunge and yellow perch (warmwater fisheries). Other species such as lake herring, burbot, bullhead and panfish provide additional angling opportunities. Commercial fishing in the District is restricted to the bait fish industry.

2.1.2 The Resource

The proximity of Bancroft District to densely populated Southern Ontario has contributed to it becoming a popular summer and winter recreation area. The broad mixture of coldwater and warmwater fishing opportunities offered by the District adds to its popularity and assists in providing social and economic benefits.

A map showing key aspects of the District's fisheries resource base is provided in Figure 2 (in pocket at back of booklet). As well, maps detailing various other fisheries-related information such as the location of dams, land tenure, recreation trails, resource access and the location of commercial bait fish licencing blocks, are presented in Appendices 1,2,3,4 and 5.

A summary of the District's fisheries resource capabilities is presented in Table 1. The allowable harvest represents the best current estimate of the number of kilograms of fish available annually to the angler, while allowing for the maintenance of fish stocks.

Allowable harvests for coldwater and warmwater fisheries are 17,300 kg/yr and 69,300 kg/yr respectively. These values are used in assessing the District's resource base capabilities.

2.2 Resource Use and Projections

This section summarizes how the fisheries resource is currently being used, what the projected demand will be by the year 2000 and what the resource base is capable of providing on an annual basis (Table 1).

TABLE 1: Resource Use and Capabilities - Bancroft District

FISHERIES RESOURCE	CURRENT USE [1]			ANTICIPATED DEMAND BY YEAR 2000		RESOURCE BASE CAPABILITIES
Species	Opportunities	Angler Success [2] (kg/opportunity)	Harvest (kg)	Opportunities [3]	Harvest [4] (kg)	Allowable Harvest [5] (kg)
Lake Trout	51,600	0.15	7,900	59,400	9,100	4,100
Brook/Rainbow Trout	81,400	0.23	19,000	93,600	21,800	8,400
Splake	-	-	-	-	-	400
Lake Whitefish	-	-	-	-	-	1,500
Non-Producing Coldwater	-	-	-	-	-	2,900 [6]
Total Coldwater	133,000		26,900	153,000	30,900	17,300 [7]
Walleye	26,400	0.22	5,700	30,400	6,600	12,900
Bass	59,400	0.23	13,400	68,300	15,400	32,300
Muskellunge/N. Pike	4,500	0.18	800	5,100	900	10,500
Yellow Perch	-	-	-	-	-	10,000 [8]
Non-Producing Warmwater	-	-	-	-	-	800 [8]
Unknown Waters	-	-	-	-	-	2,800 [9]
Total Warmwater	90,300		19,900	103,800	22,900	69,300 [10]
Other Species [11]	-	-	-	-	-	-
TOTAL	223,300		46,800	256,800	53,800	86,600

1 From Bancroft District creel surveys (one opportunity equals 4 hours fishing).
2 Represents current angler success as indicated by the District creel surveys. These success rates are in most cases lower than the recommended provincial quality standard.
3 Based on current use plus 15% user increase.
4 Anticipated harvest based on current angler success rates (See 2 above). If success rates improve to meet provincial angling quality standards, the harvest will increase and approach the total allowable harvest.
5 Best estimate of game fish available to anglers on an annual basis while allowing for maintenance of fish stocks.
6 Represents the allowable harvest obtainable from waters not currently producing coldwater species but which have the potential to do so.
7 Presumes waters containing coldwater species are producing at full potential. This is not presently occurring.
8 Represents the allowable harvest obtainable from waters not currently producing warmwater species but which have the potential to do so.
9 Waters about which little is known, but which are assumed to have warmwater potential.
10 Presumes waters containing warmwater species are producing at full potential. This is not presently occurring.
11 Consists of lake herring, suckers, rock bass, pumpkinseed, etc. Reliable resource data is not available for these species.

Sport fishing - Bancroft District currently provides an estimated 223,300 angling opportunities annually. (One angling opportunity is the equivalent of four man-hours fishing). This estimate is the best available, utilizing recent District creel survey information and Assessment Unit creel survey data. Other fish species such as lake herring, suckers, burbot (ling), panfish, etc., provide many thousands of additional angling opportunities annually; however, specific estimates for these species are unavailable.

Anglers in the Bancroft District presently harvest 46,800 kg of game fish per year. Approximately 57% of this harvest consists of coldwater species. Only a small portion (9%) of anglers fishing in the District reside outside the Province of Ontario.

Demand for angling opportunities is expected to increase 15% by the year 2000 to approximately 256,800 angler opportunities per year. If angler preference and the quality of angling remain the same as they are today, projected harvest is estimated at 53,800 kilograms of game fish; however, if the quality of angling improves to meet the Provincial angling quality standards (.2 and .5 kg of cold/warmwater fish respectively per angling opportunity), the harvest will approach the District's resource base capability of 86,600 kg/yr (total allowable harvest). This suggests that the fisheries resource base can meet the projected demand; however, it assumes that the resource is producing to its full potential, which it currently is not. As well, the projected demand for coldwater species far exceeds the resource base capabilities. Much of the total demand will have to be met through warmwater angling opportunities and/or angling for species which are less popular; e.g. burbot, panfish.

Bait Fishery - There are currently 32 licenced bait fish harvesters within the Bancroft District. Annual returns indicate harvests ranging between 60,000 and 90,000 dozen per year, having an average estimated gross value of $64,000 per year. At present, no method of determining bait fish productivity exists. It is reasonable that as the demand for sport fishing opportunities increases, so will the demand for bait fish. Although no accurate inventory data exist, the bait fish resource in the Bancroft District is thought to have the potential to support increased utilization.

2.3 Current Management Practices

The following is a summary of the Bancroft District's current management practices. Appendix 6 summarizes current fisheries management programs and indicates a three-year average of accomplishments through regular M.N.R. and special employment program funding.

2.3.1 Planning

Plan input and review is a critical aspect of fisheries management. It allows fisheries staff to comment and make changes where required on plans that affect the local fisheries resource. Plans for lakeshore development, municipal zoning and forest management are typical of those regularly reviewed by fisheries staff.

2.3.2 Inventory and Assessment

An integral part of the District's fisheries program is the collection, analysis and evaluation of fisheries information. This is accomplished through various types of studies. To date, basic aquatic habitat inventories have been completed on 300 lakes and 2 streams, which represent 85% of the District's water area. Assessment of oxygen/temperature regimes and spawning habitat has been completed on most lake trout lakes. Many of the District's brook/rainbow trout fisheries have been assessed for oxygen availability during the most critical time of the year (late winter). As well, spawning habitat and activities have been documented on 13 walleye and 12 muskellunge lakes.

Creel surveys provide valuable information on game fish population size and structure, as well as angling pressure, success rates and harvest. In the last three years, 25 creel surveys have been conducted on Bancroft District lakes.

The analysis of information from these various sources and from the provincial fisheries assessment unit network provide the bases on which fisheries management decisions are made.

2.3.3 Operations

The operations portion of fisheries management involves enforcement of fisheries laws and regulations, fish population management and habitat management. Regular fisheries enforcement activities in Bancroft District are carried out by four full-time conservation officers. During peak enforcement periods, regular enforcement effort is supplemented by deputy conservation officers.

The primary purpose of the fish stocking program is to help provide angling opportunities through the maintenance of existing fisheries and the rehabilitation of faltering or depleted fish populations. The largest portion of the stocking program involves the planting of four trout species (lake trout, brook trout, rainbow trout and splake). Some walleye and muskellunge stocking also occurs in a few warmwater fisheries.

Habitat management involves the protection of the aquatic environment through federal and provincial regulations, the rehabilitation of degraded fish habitat and/or the creation of new habitat, mainly spawning areas, and provides a means of increasing fish productivity. In the last three years, the District's program has focused primarily on the enhancement and rehabilitation of lake trout and walleye spawning areas. To date, 50 lake trout and 16 walleye spawning sites have been rehabilitated.

2.3.4 Public Service

Fisheries personnel provide a wide variety of services to the public, the most common of which includes responding to requests for general information concerning fishing in the District and the status of specific lakes. More recently, considerable effort has been expended on administration and supervision of Community Fisheries Involvement Programs (C.F.I.P.) which are becoming more popular as the public takes a more active role in the conservation and management of the District's fishery resource.

2.4 Supply/Demand Analysis and Target Refinement

The objective of the Ministry of Natural Resources for fisheries management is to provide opportunities for recreation and economic benefits consistent with the maintenance of healthy fish communities. More specifically, the fisheries management goals are to meet demand within the limits of a wisely managed and rehabilitated resource, to maintain current bait fish production and to prevent the extinction of any native fish species. To assist in meeting these objectives, specific interim targets were formulated in the District Land Use Guidelines (D.L.U.G.) in 1983. Since then, additional resource base information has become available, which suggests the D.L.U.G. targets must be refined to more realistically reflect the resource base capabilities.

To determine the refined target the district's allowable harvest (resource base capability) for coldwater and warmwater fisheries was divided by the appropriate provincial angling quality standard (.2 and .5 kg/opportunity for cold/warmwater species respectively). This indicated the number of fishing opportunities that the resource base could support. This estimate was compared to current use and anticipated demand to the year 2000 to determine whether a surplus or deficit existed within the resource base. The results of this comparison led to the development of the district's refined fisheries target of providing 256,800 angling opportunities at a harvest level of 86,600 kg annually, by the year 2000 (Table 2). Further refinement of the target may be necessary in the future as new information becomes available.

TABLE 2: Resource Use Summary and Target Testing

RESOURCE	CURRENT USE		ANTICIPATED DEMAND BY YEAR 2000		DLUG TARGET		RESOURCE BASE CAPABILITIES[8]		INTERIM REFINED TARGET	
	Opportunities[4]	Harvest (kg)	Opportunities[5]	Harvest (kg)	Opportunities	Harvest (kg)	Opportunities	Allowable Harvest	Opportunities	Harvest (kg)
Sport Fishery										
Coldwater[1]	133,000	26,900	153,000	30,900			86,500	17,300	86,500	17,300
Warmwater[2]	90,300	19,900	103,800	22,900			138,700	69,300	138,700	69,300
Other Species[3]	-	-	-	-			-	-	31,600[9]	-
Total	223,300	46,800	256,800	53,800[6]	730,000[7]	-	225,200	86,600	256,800	86,600

1 Coldwater resource includes: lake trout, brook/rainbow trout, splake, lake whitefish and non-producing coldwater.
2 Warmwater resource includes: walleye, bass, muskellunge/N. Pike, yellow perch, non-producing warmwater and unknown waters.
3 Other species resource includes: lake herring, suckers, rock bass, pumpkinseed, burbot (ling), etc.
4 Based on Bancroft District current creel surveys (one opportunity equals 4 hours fishing).
5 Based on current use plus 15% user increase.
6 At the current success rate, which is well below Provincial angling quality standard. If success rate meets the angling standard, harvest will approach the allowable harvest.
7 The DLUG target requires refinement to realistically reflect the fisheries resource base capabilities.
8 Represents available opportunities if all waters were producing at full potential. Based on allowable harvest and provincial angling quality standard of 0.2 and 0.5 kg/opportunity for cold and warmwater respectively.
9 The biological potential of other species such as lake herring, rock bass, suckers, etc., is difficult to estimate; however, it is estimated that these species can provide a minimum of 31,600 angling opportunities.

Note: The Commercial Fishery in Bancroft District is restricted to the bait fish industry. Current use of the bait fish fishery is a harvest of 60,000 to 90,000 dozen per year. The DLUG target for baitfish is 87,000 dozen, which becomes the interim refined target for the bait fish industry in Bancroft District.

The supply and demand analysis and target refinement exercise has highlighted the fact that a major shortfall in coldwater fishing opportunities exists now and will continue to exist in the future. To ensure that overall demand for angling opportunities is met, it is imperative that excess pressure on coldwater species be diverted towards alternative fisheries, that all non-producing and under-producing cold and warmwater fisheries be brought into full production, that all key game fish populations and critical habitat be protected, and that other species such as lake herring, panfish, suckers, etc., provide a minimum of 31,600 angling opportunities.

2.5 Problems and Issues

To meet the primary target of providing 256,800 angling opportunities by the year 2000, at a reasonable level of angling quality, there are seven distinct problems and issues that must be addressed. Some of these are readily apparent and there is an obvious link between the problem and target achievement. Others are less obvious, but they too will affect our ability to meet the target.

The seven primary problems and issues affecting fisheries in Bancroft District are summarized below:

1. Current and projected demand and harvest of coldwater species exceeds the district coldwater resource capabilities (allowable harvest).

Bancroft District has a limited amount of habitat which can support coldwater fisheries. These species are extremely popular and are avidly sought after by local residents and visitors alike. The present harvest and anticipated demand for coldwater fishing opportunities throughout the District on lakes such as Bay, Anstruther and Eels, exceeds the carrying capacity of the resource. This situation can lead to the collapse and possible extinction of desirable populations and to the proliferation of less desirable species, which in turn will seriously affect our ability to meet our fisheries target.

2. At present, there are many under-producing waters in the district. To ensure that angler demand is met, these waters must be brought to full potential.

Many waters throughout the District are not producing the quantity and quality of game fish of which they are capable. While there are numerous factors contributing to this problem, the two main causes are thought to be habitat deterioration and excessive fishing pressure. This situation is thought to be affecting a large number

of coldwater and warmwater fisheries throughout the District. Lake trout (Monck Lake), walleye (Baptiste and Lower Paudash Lakes) and brook trout are the species most seriously affected. To a lesser degree, the problem is also felt to be occurring on some of the small bass lakes throughout the District. This is a serious problem that must be resolved if the District is to meet its target commitments.

3. Several fish species existing in Bancroft District can provide additional angling opportunities, but at present are underutilized.

A number of fish species, such as yellow perch, rock bass, lake herring, suckers and burbot (ling), are common throughout the district, but are generally overlooked by anglers. Although these species could support significant increases in angler pressure, they are consistently ignored in favour of the more traditional target species, such as lake trout, brook trout and walleye. In some instances, the underutilized species are out-competing the more popular species, causing undesirable changes in fish community structure. Such is the case in lakes like Chandos, Papineau and Baptiste. To a certain degree, underutilization of warmwater species, such as bass, is thought to occur in lakes which have no public access or are difficult to reach. Increased angler interest in underutilized species is required if future demands for angling opportunities are to be met.

4. The loss of valuable fish species and stocks is of great concern in the Bancroft District. To date, at least five (5) lake trout fisheries have been lost and several more are threatened. Brook trout and walleye fisheries have also been lost, but the extent of the loss is unknown.

In a number of lakes throughout the District, some important fish species have disappeared or have been seriously reduced in numbers. In recent years, a combination of factors such as habitat loss, heavy angling pressure and the introduction of non-indigenous or competitive species has put increasing stress on a limited and deteriorating fisheries resource. Although the losses have been best documented in lake trout fisheries, e.g. Jack, Monck, Steenburg and Gin Lakes, they are also occurring in brook trout and walleye populations across the District.

Although attempts to maintain and rehabilitate native fish populations are ongoing, the loss of fish species remains a very serious problem which must be addressed. Failure to take appropriate corrective actions will result in the continued erosion of the District fisheries base and make it impossible to meet the fisheries target.

5. Effective fisheries management is hampered to some degree by the lack of data base information and scientific knowledge. Many fisheries resource problems are complex and there is uncertainty as to the management approaches required to rectify certain resource problems.

Many of the aquatic ecosystems throughout the Bancroft District are diverse and complex. A broad data base, detailing key aspects of these systems is required if fisheries managers are to accurately diagnose the condition and status of the local resource, and prescribe appropriate management procedures.

As conditions deteriorate and become more complicated, the lack of a good data base and/or scientific knowledge becomes more critical and can result in an unnecessarily long rehabilitation process or even the further deterioration of the resource. This will ultimately result in the loss of fishing opportunities that are required to meet angler demand.

6. Minimal public knowledge and involvement in fisheries management has resulted in a lack of public awareness. A better-informed public, taking a more active role in fisheries management can lead to an increase in fish production and support for management programs.

Many members of the public are unaware of the basic concepts of fisheries ecology and management. To a degree, this has been caused by the lack of effective fisheries education, information and public involvement programs in the District. This lack of awareness has had a number of negative effects on the local fisheries resource. In some instances, it has resulted in the removal or destruction of critical spawning or nursery habitat. In others, it has led to unrealistic expectations concerning what the resource can produce and in still others, it has slowed acceptance of important management proposals. The end result of these types of situations is a decrease in fish production and the loss of angling opportunities. This ultimately affects the District's ability to meet its fisheries target.

7. The Bancroft District is dependent on hatchery-reared fish to support angler demand for coldwater species and to rehabilitate some warmwater fisheries; however, hatchery fish are costly, susceptible to disease and may not always be consistently available in the quantity, size and species required. Innovative ways of managing fisheries which reduce the dependence on provincial hatchery stock are required to help meet future needs.

Fish stocking is a management technique used in many lakes throughout Bancroft District to assist in maintaining and rehabilitating depleted natural stocks and to provide supplemental angling opportunities through the creation of artificial (non-reproducing) fisheries. The high cost and vagaries of the provincial hatchery system sometimes restrict the size, quantity and species of hatchery fish available. Current efforts are directed at improving strains and sizes to enhance stocking success; however, it must be recognized that stocking is not always a cure-all and that alternative ways of meeting angler demand are needed.

3.0 OPTIONAL MANAGEMENT STRATEGIES AND TACTICS

3.1 Introduction

An integral part of the planning process is the identification, assessment and selection of management strategies and related tactics, which will enable managers to meet the fisheries target. Strategies are action plans designed to address problems which have been identified. Tactics are individual management projects devised to achieve a particular strategy. Each strategy and tactic has been evaluated as to its effectiveness, efficiency, legal and administrative requirements, and potential environmental impacts.

A range of strategies and tactics is possible. After public consultation, the most appropriate options will be selected for inclusion in the draft plan.

It is important that you review and comment on the following strategies and tactics, since public response will form the basis for refinement of the Fisheries Management Plan.

3.2 Strategies and Tactics

Optional management strategies and tactics which address the problems and issues facing Bancroft District fisheries are presented as follows:

1. PROBLEM/ISSUE: Current and projected demand and harvest of coldwater species exceeds the District coldwater resource capabilities (allowable harvest).

Optional Strategies	Optional Tactics	Evaluation: Strategies	Evaluation: Tactics
(i) Disperse angling pressure to less-utilized lakes;	(a) Institute a news release campaign aimed at directing angling pressure to less-utilized lakes;	A practical strategy to implement; however, it is uncertain as to how successful it will be in terms of shifting significant amounts of angling pressure.	All are practical to implement. Tactic (a) would be the least costly and would probably have the greatest effect. Tactics (b) and (c) would involve higher start-up costs. Tactic (b) is the least likely to be effective in terms of accomplishing a pressure shift.
	(b) Erect signs on underutilized fisheries, informing the public of the game fish opportunities on the lake;		
	(c) Improve public access to remote underutilized lakes.		
(ii) Promote use of underutilized/less popular fish species;	(a) Encourage catch-and-kill angling for less popular species; e.g. lake herring, rock bass, etc.;	A practical, feasible, low cost strategy; however, it may be difficult to accomplish a real change in angler preference.	Tactics (a), (b), (c) and (d) are feasible and practical. Tactic (d) is more complex and costly than (a), (b) and (c). Tactic (e) is attractive; however, considering the species involved, it may be impractical. As well, this tactic is complex in terms of implementation and administration.
	(b) Encourage and promote Youth Derbies for less popular species;		
	(c) Institute a public information campaign concerning angling techniques and recipes for less popular species;		
	(d) Educate public as to effects of less popular species on major game species;		
	(e) Provide or expand opportunities for alternative means of fishing for underutilized species; i.e. bow and arrow for coarse fish.		

(iii) Enhance existing fish populations	(a) Identify and protect critical fish habitat; e.g. spawning beds, nursery areas, etc.; (b) Where possible, enhance/ rehabilitate critical fish habitat; (c) Increase supplemental fish stocking where required; (d) Monitor and review lakeshore developmental proposals to ensure the fisheries' needs are being considered; (e) Promote fish culture projects by public interest groups through C.F.I.P.	A very effective and practical strategy, but may be costly. It involves some environmental assessments.	Tactics (a) and (b) would require additional funds and staff, but would be very effective and practical. Tactic (c) may be difficult to implement due to shortage of hatchery fish. Conflicts between interest groups may develop by implementing tactic (d). The most attractive tactic which involves the public is (e), but it involves considerable administrative time and effort and there is some uncertainty as to the results.
(iv) Regulate access;	(a) Discourage/restrict/ control access to overharvested waters; (b) Open/improve access to underfished waters.	May be difficult to implement and maintain due to additional administrative requirements. It would be effective and feasible; however, practicality is questionable.	Tactic (a) would be effective, extremely difficult to implement and control, and would require additional enforcement. Tactic (b) is more practical and feasible than (a), and would involve, in some cases, private sector agreements. These may be difficult to obtain.
(v) Control harvest to protect existing fish populations, where required;	(a) Alter angling seasons; e.g. shorten or close seasons; (b) Change daily possession limit; (c) Implement size limit approach; e.g. slot limit. (d) Implement gear restrictions; e.g. fly fishing only, one line only, no live bait, etc.; (e) Designate selected areas as fish sanctuaries.	This strategy is the most effective, practical and necessary approach.	All tactics would be complex in terms of implementation and administration. Tactic (a) is a proven management technique that is most likely to accomplish significant harvest reductions. For some species; i.e. lake trout, tactic (b) will be ineffective. Tactics (c) and (d) are experimental in nature. Unless (e) is implemented on a whole lake basis for a substantial time period, this tactic would have limited effectiveness. Increased fisheries enforcement would be required for all tactics.

(vi)	Create more coldwater fisheries;	(a) Convert marginal lake trout or brook trout lakes to splake; (b) Create more put-and-take rainbow trout fisheries; (c) Survey unknown waters to determine which have potential for coldwater management and then actively manage as coldwater fisheries; (d) Chemically reclaim headwater lakes that have been lost to coarse fish.	There would be high costs involved in terms of funds and manpower, but if overcome, this is an effective strategy. Environmental assessments would be required in some aspects of the strategy.	Tactics (a) and (b) are practical and effective and should show the best results. Of these two tactics, (b) would involve the higher costs. Tactics (c) and (d) require major expenditures. Tactic (c) may only provide a small return and (d) is likely to be effective for only a limited period of time; e.g. ten years before retreatment is required.

2. PROBLEM/ISSUE: At present, there are many underproducing waters in the District. To ensure that angler demand is met, these waters must be brought to full potential.

	Optional Strategies	Optional Tactics	Evaluation: Strategies	Evaluation: Tactics
(i)	Protect and rehabilitate natural reproducing fish populations in under-producing waters;	(a) Monitor angler harvest levels and control harvest as necessary through appropriate regulations to ensure angler harvests do not jeopardize rehabilitation efforts; (b) Determine factors limiting natural recruitment and work to eliminate or reduce these stresses; e.g. if water levels are inhibiting natural recruitment, then negotiate with dam control agencies and appropriate user groups for a more appropriate timing of drawdown. (c) Protect fisheries, as required, from additional access or development, through plan input and review of development or resource extraction plans; (d) Control any dredging, filling, etc., which will impair or destroy critical fish habitat; (e) Stock hatchery-reared fish, as necessary, to maintain and improve self-sustaining fisheries.	This is the most important and necessary strategy. It is effective and efficient in terms of bringing waters to full potential.	Tactics (b) and (e) are the most effective and practical methods. Tactic (e) involves somewhat higher costs than (b) and the necessary stocks are not always readily available. Tactic (a) would be effective but is expensive and may not be readily accepted by the public. Tactics (c) and (d) are both time-consuming and costly, but necessary. Their effects are difficult to measure. An increase in fisheries enforcement will be required for tactics (a) and (d).

(ii) Utilize the fisheries production potential in presently barren/ underproducing waters;	(a) Introduce warmwater fish species; i.e. bass, walleye, muskellunge, to create self-sustaining fisheries in all suitable waters; (b) Stock rainbow trout, brook trout and/or splake to create put-and-take trout angling opportunities in all suitable barren/under-producing waters; (c) Provide fisheries management advice and encourage establishment of sport fisheries in private waters.	This strategy is practical, effective and involves variable costs; however, it is necessary in order to meet angler demand.	Tactics (a) and (b) are effective and practical approaches. Tactic (a) is relatively inexpensive, but involves a long time frame; whereas (b) provides a quick return, but is more costly. Tactic (c) is inexpensive as well, but will be least effective.
(iii) Rehabilitate degraded fish communities;	(a) Encourage catch-and-kill fishing of less popular species which are inhibiting major game species; e.g. rock bass vs. smallmouth bass; (b) Initiate coarse fish removal programs; e.g. through C.F.I.P. (c) Restrict use of live bait in newly rehabilitated or stocked waters as required; (d) Adjust angling season accordingly to ensure harvest does not jeopardize rehabilitation efforts; (e) Chemically reclaim, where possible, waters with coarse fish problems, and restock; (f) Encourage fish culture projects through C.F.I.P.; (g) Inform the public of the effects that less popular species have on fish communities.	This strategy, although involving high costs and intensive labour, is necessary and important. It would be both practical and effective.	All tactics, except (a), involve high costs. Tactic (a) is relatively inexpensive, but may not be very effective. Tactic (e) is known to be effective on head water lakes; however, its effectiveness is usually limited; i.e. ten years. There is uncertainty as to the effectiveness of (b), (c) and (f). Tactic (d) is extremely expensive in establishing the need and may not be readily accepted by the public.

(iv)	Protect, enhance and rehabilitate critical fish habitat;	(a) Protect fish habitat by effectively enforcing existing legislation; (b) Locate and identify degraded fish habitat; (c) Rehabilitate degraded fish habitat through comprehensive H.N.R. or C.F.I.P. rehabilitation programs; (d) Create new fisheries habitat; (e) Continue to work with M.O.E. to monitor and react to water quality changes.	A costly but necessary and effective strategy.	All tactics are important and effective. Tactics (a) and (e) involve relatively low costs. Tactics (b), (c) and (d) are costly and labour intensive.

3. PROBLEM/ISSUE: Several fish species existing in Bancroft District can provide additional angling opportunities but at present are underutilized.

Optional Strategies	Optional Tactics	Evaluation: Strategies	Evaluation: Tactics
(i) Promote use of underutilized species;	(a) Investigate and encourage innovative angling techniques for species such as lake herring, burbot, catfish, perch and suckers; (b) Initiate a public information campaign concerning areas in which underutilized species are found, provide angling techniques and recipes; (c) Encourage derbies for underutilized species to increase interest in these species; (d) Open/improve access to underfished waters.	A very practical, feasible, low cost strategy; however, it may be difficult to accomplish a real change in angler preference.	All tactics are relatively inexpensive, practical and feasible; however, (a) would be more time-consuming and would involve more research. In some cases, tactic (d) would require private sector agreements which may be difficult to obtain.

4. **PROBLEM/ISSUE:** The loss of valuable fish species and stocks is of great concern in the Bancroft District. To date, at least five (5) lake trout fisheries have been lost, and several more are threatened. Brook trout and walleye fisheries have also been lost but the extent of the loss is unknown.

Optional Strategies	Optional Tactics	Evaluation	
		Strategies	Tactics
(i) Prevent any further decline of key game fish species or genetic stocks;	(a) Identify threatened species or genetic stocks;	The prevention of any further decline of fish populations is vitally important to Bancroft District fisheries resource. It is expensive but practical and effective.	Tactics (a) and (b) are labour intensive and involve high costs, but are feasible and very effective. Tactic (g) has associated high costs, stock required is not always available and in some cases there is uncertainty as to effectiveness. Tactic (c) involves moderate administrative and financial costs, legislation changes and may not be readily accepted. Tactic (f) has reasonable implementation costs and is thought to be important; however, results are relatively difficult to quantify. Tactics (d) and (e) would involve moderate to low costs, but may not have significant effects on declining populations. Tactic (h) is feasible and should be effective.
	(b) Improve assessment of causes resulting in population decline and implement management practices accordingly;		
	(c) Promote special regulations to restrict harvest; e.g. shorten season, slot size limit to protect brood stock, where required;		
	(d) Encourage removal of any competing species impairing well-being of threatened stock;		
	(e) Reduce or eliminate unauthorized introductions of competing species by regulating fish transfers and educating the public as to the potential impacts of unauthorized introductions;		
	(f) Control any dredging, filling, etc., which will impair or destroy critical fish habitat;		
	(g) Stock hatchery-reared fish as necessary to prevent further decline of population;		
	(h) Increase effectiveness of fisheries enforcement of habitat protection and other regulatory controls.		

(ii) Maintain or improve all key game fish populations and communities and protect genetic stocks;	(a) Rehabilitate deteriorated habitat; i.e. spawning habitat, through M.N.R. and/or C.F.I.P. initiatives;	This is a necessary, important and effective strategy which involves considerable expense.	Tactic (a) is feasible, practical and effective, but involves high cost and is labour intensive. The results of tactic (d) are difficult to quantify. Tactic (b) is important but is labour intensive and involves legislation changes which may not be readily accepted. Tactic (c) would involve high costs and stock may not always be available. Also, in some instances, there is uncertainty as to the effectiveness of (c). Tactic (e) is feasible and should be effective.
	(b) Monitor angler harvest levels and control harvest as necessary through appropriate regulations;		
	(c) Stock hatchery reared fish as necessary to maintain and improve fisheries;		
	(d) Control any dredging, filling, etc., which will impair or destroy critical fish habitat.		
	(e) Increase effectiveness of fisheries enforcement of habitat protection and other regulatory controls.		

5. PROBLEM/ISSUE: Effective fisheries management is hampered to some degree by the lack of data base information and scientific knowledge. Many fisheries resource problems are complex and there is uncertainty as to the management approaches required to rectify certain resource problems.

		Evaluation	
Optional Strategies	Optional tactics	Strategies	Tactics
(i) Ensure research and assessment meets the needs of the District;	(a) Identify areas at district level where more information and research is needed;	This is an important and necessary strategy. If it could be successfully implemented, it would be very effective.	Tactic (a) is very important, would have relatively low costs and is considered feasible. Tactic (b) would be difficult to implement. Tactic (c) has moderate start-up costs, but may involve lengthy follow-up and high long-term monitoring costs. A change in existing legislation might also be required.
	(b) Encourage research projects by M.N.R. fisheries research branch and/or outside agencies, pertaining to specific problems common to many districts;		
	(c) Work with fisheries assessment units to assess management programs and to initiate experimental management projects.		

(ii) Make effective use of new knowledge and technology;	(a) Access knowlege and information from other districts, assessment units and outside agencies; (b) Initiate experimental management projects through C.E.I.P. or M.N.R.; (c) Computerize the District fisheries data base to facilitate intelligence transfer.	This is an important strategy, but may be costly and difficult to implement.	The effectiveness of (a) is uncertain and it would be time-consuming and expensive. Tactic (b) is practical, important and should be effective but there is uncertainty as to the extent of costs involved. Tactic (c) is necessary, but will involve moderate to high costs and the effectiveness is uncertain; however, it may be the most efficient method for handling data.
(iii) Expand local District data base;	(a) Initiate and maintain trend-through-time data on selected representative 'type' lakes; (b) Organize and establish data base with respect to fish community type in order to match data provided by Fisheries Assessment Units; (c) Conduct brief preliminary fisheries surveys on unknown waters and follow up with full aquatic habitat inventory surveys on those showing management potential; (d) Encourage anglers to submit volunteer creel forms.	Involves considerable time and effort but would be very effective and beneficial.	Tactic (a) is a valid, effective approach and will involve high costs. Tactics (b), (c) and (d) are cost effective ways of approaching the problem. Tactic (b) would be easy to implement. Tactic (d) is attractive because of public involvement, but would have limited effect.

6. **PROBLEM/ISSUE:** Minimal public knowledge and involvement in fisheries management has resulted in a lack of public awareness. A better-informed public, taking a more active role in fisheries management, can lead to an increase in fish production and support for management programs.

Optional Strategies	Optional Tactics	Evaluation: Strategies	Evaluation: Tactics
(i) Involve the public in key aspects of fisheries management;	(a) Encourage more C.F.I.P. projects; (b) Encourage self-help programs and/or Volunteer Creel Surveys on lakes with active cottagers' associations; (c) Issue news releases to local paper on key aspects of the District fisheries programs; (d) Institute regular meetings/ open houses with key interest groups to update them on District fisheries programs.	Involves considerable time and effort, but would be very effective and beneficial.	All of these tactics have relatively low operational costs, but would require substantial staff time. Effectiveness is dependent upon the level of public involvement.
(ii) Educate the public with regard to fisheries ecology and the effects of stresses on fisheries;	(a) Encourage local school boards to include fisheries studies in the science portion of the public school curriculum; (b) Create and/or update fisheries information and education booklets; (c) Utilize marinas, local sports shops, liquor/ beer outlets and visitor services programs in provincial parks to distribute information booklets; (d) Develop a comprehensive public information and education program; (e) Set up educational displays at summer regattas.	This strategy would be more time-consuming than strategy (i) and more expensive. Although it would be effective, the benefits would be difficult to quantify.	These tactics involve low to moderate costs. Tactic (d) would be the most effective. The effectiveness of (e) is uncertain.

(iii) Promote co-operation between user groups;	(a) Encourage regular meetings between interest groups to discuss and/or resolve issues and potential conflicts as required;	Although this strategy is difficult to implement and accomplish, it is potentially useful and effective.	Tactic (a) is practical and feasible with relatively low cost but effectiveness is uncertain. Tactic (b) would have moderate to high initial costs but should be effective.
	(b) Design and distribute information packages for different user groups to help them obtain a basic understanding of fisheries needs and problems.		

7. PROBLEM/ISSUE: The Bancroft District is dependent on hatchery-reared fish to support angler demand for coldwater species and to rehabilitate some warmwater fisheries; however, hatchery fish are costly, susceptible to disease and may not always be consistently available in the quantity, size and species required. Innovative ways of managing fisheries which reduce the dependence on provincial hatchery stock are required to help meet future needs.

		Evaluation	
Optional Strategies	Optional Tactics	Strategies	Tactics
(i) Optimize the use of hatchery-reared fish;	(a) Stock hatchery-reared fish where they will give the best returns to anglers and/or meet specific management goals; i.e. rehabilitation;	This strategy is important, feasible and should be effective. Costs would be variable.	Tactics (a) and (c) involve low costs and should be effective. Tactic (b) would increase labour costs somewhat over present methods. Tactic (d) is practical and very effective; however, involves high costs.
	(b) Stock fish in area of lake where there is the least chance of predation;		
	(c) Stock fish at densities prescribed by regional stocking formulae;		
	(d) Assess results of stocking and adjust stocking program accordingly.		

(ii) Promote fish culture projects by the public;	(a) Provide advice, expertise and monetary incentives to public interest groups to culture fish through C.F.I.P.;	This strategy would involve moderate costs; however, it is believed to be effective only in carefully selected circumstances.	Tactic (a) could have moderate costs and if successfully implemented, could be very beneficial. Tactic (b) has associated high costs and at present, private hatcheries do not have the capability to meet the demand; however, if this was overcome, it could be very effective.
	(b) Encourage expansion of private hatchery system by purchasing more fish from private sector for put-and-take stocking.		
(iii) Encourage innovative fish culture projects which will reduce culture costs and address the lack of appropriate supply issue;	(a) Experiment with new concepts; e.g. cage culture;	This strategy would involve low to moderate costs, is thought to be feasible and practical, and, if successfully implemented, would be effective.	Tactics (a) and (b) are of an experimental nature and for this reason the efficiency and effectiveness are uncertain. Tactic (b) has the greatest potential for success. It would require changes in legislation.
	(b) Establish sanctuary donor lakes to act as reservoirs for use in adult transfers.		
(iv) Promote and establish self-reproducing fisheries to reduce dependence on hatchery reared fish;	(a) Promote stocking of species that have the capability of establishing naturally reproducing populations;	A very important and feasible strategy. It would involve moderate to high costs initially, but in the long-term would be one of the least expensive and most effective options.	All tactics for this strategy are of great importance to the District's fisheries. Tactics (b), (c) and (d) are considered labour-intensive and (b) would require long-term follow-up. Legislation changes would be required if tactic (d) was implemented. Tactic (a) is inexpensive but the effectiveness of this tactic is uncertain.
	(b) Monitor the status of naturally reproducing populations to ensure they remain healthy and stable;		
	(c) Identify, protect, rehabilitate and enhance critical spawning habitat;		
	(d) Monitor harvest levels on naturally reproducing fisheries and institute appropriate harvest restrictions when required.		

(v) Place the importance of fish stocking in the Bancroft District into perspective;	(a) Develop within the framework of existing guidelines a Bancroft District Fish Stocking Policy; (b) Inform and educate the public as to the rationale of the District fish stocking program; (c) Annually print and distribute the fish stocking list for the previous year; (d) Maintain a four-year fish stocking plan; (e) Assess the results of the fish stocking plan.	This strategy would be relatively inexpensive to implement and is important, but the effects of this strategy are unknown.	All tactics with the exception of (e) involve low costs. Tactic (c) is not effective. Tactics (a) and (d) are attractive approaches, in that they provide guidance for the stocking program. Tactic (e) is the most important and effective but would require additional funds and staff.

4.0 PUBLIC REVIEW

To assist you in commenting on the optional strategies and tactics presented here, we have prepared a questionnaire as a supplement to this report. Your response will be taken into consideration during the preparation of the Fisheries Management Plan. If you have any questions or if you wish to discuss any aspect of the plan, please contact John Brisbane or Bruce Collins, at the following address:

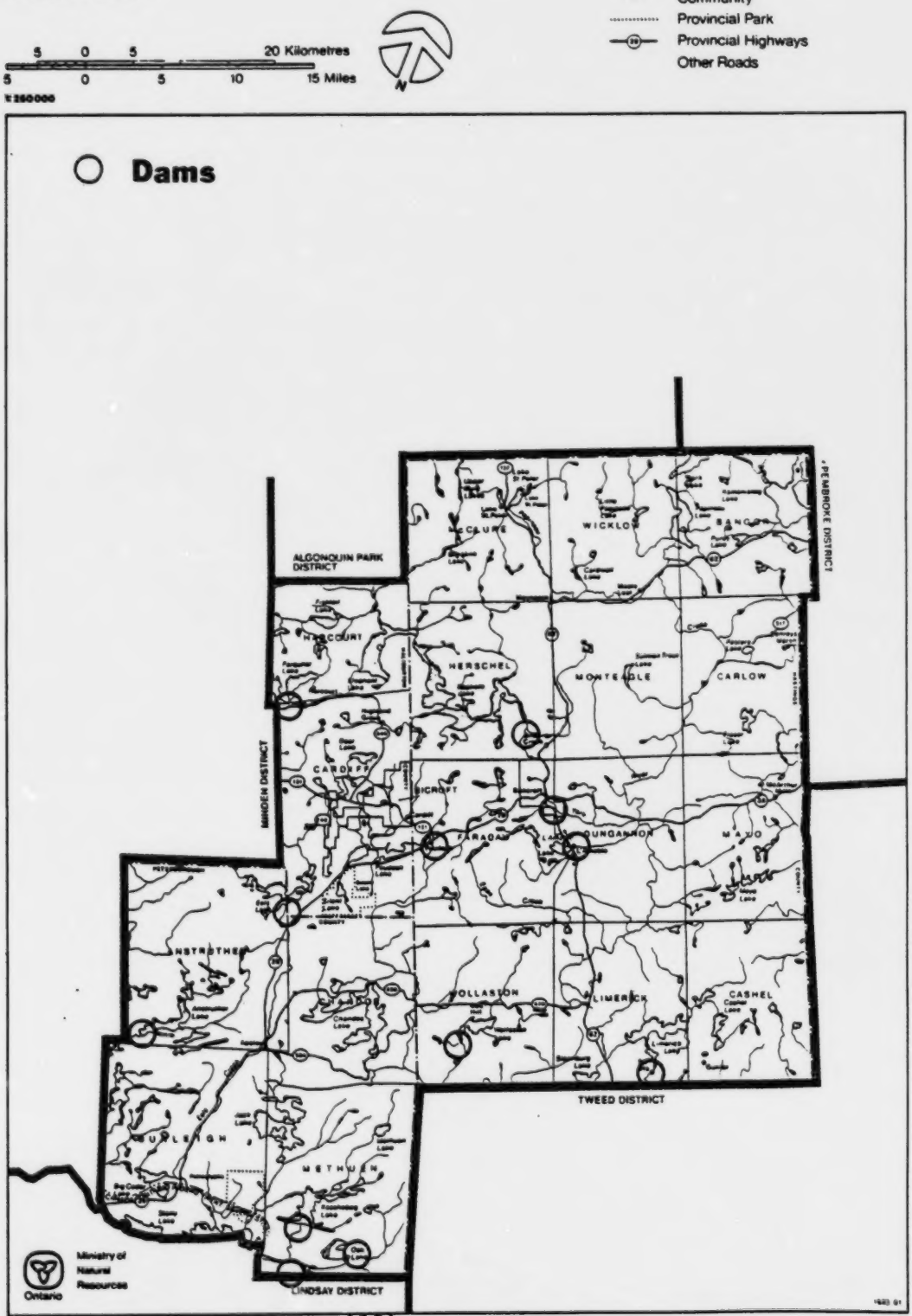
Ministry of Natural Resources
Box 500
BANCROFT, Ontario
K0L 1C0

Phone: 613/332-3940

APPENDICES

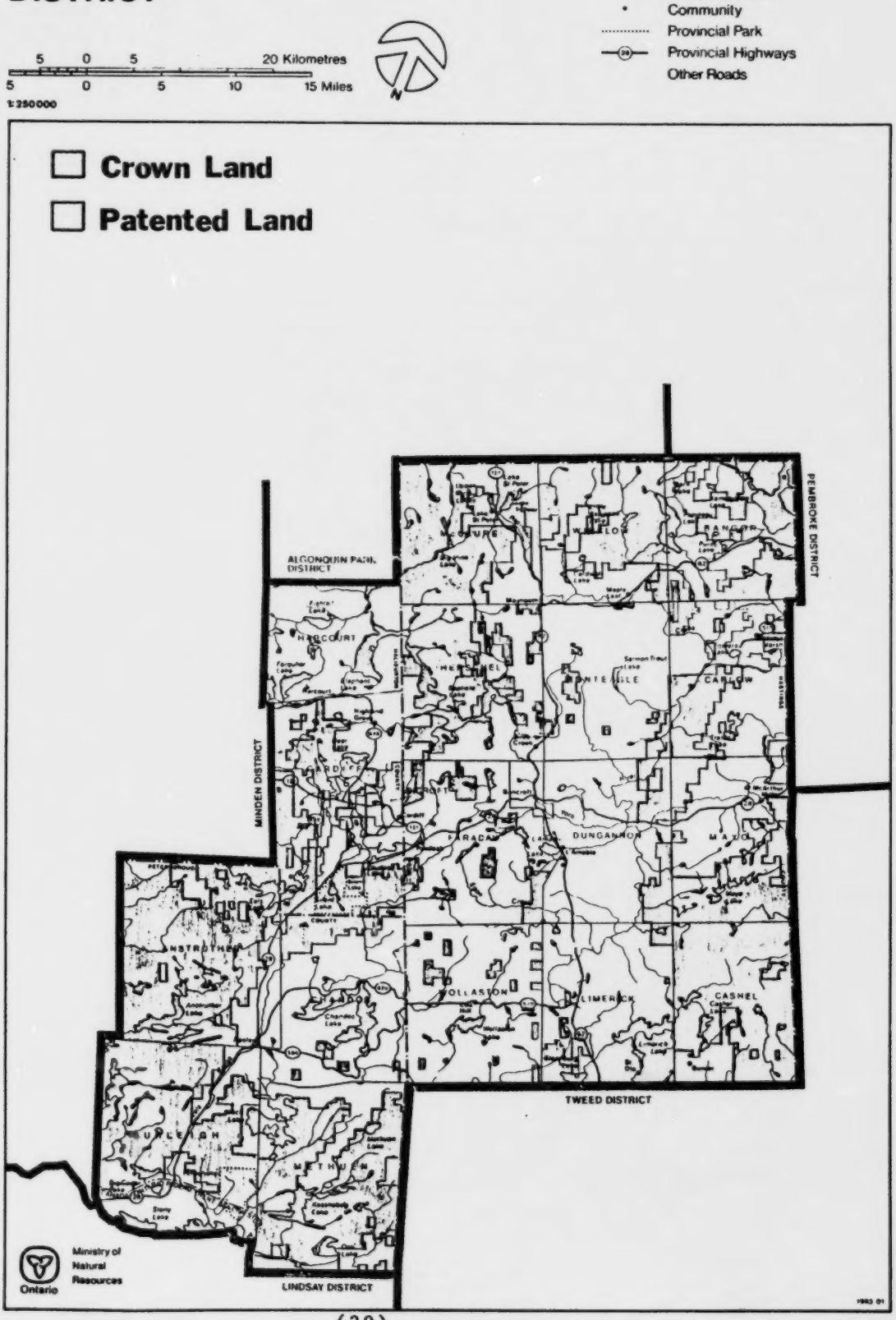
APPENDIX 1

DAMS
BANCROFT
DISTRICT



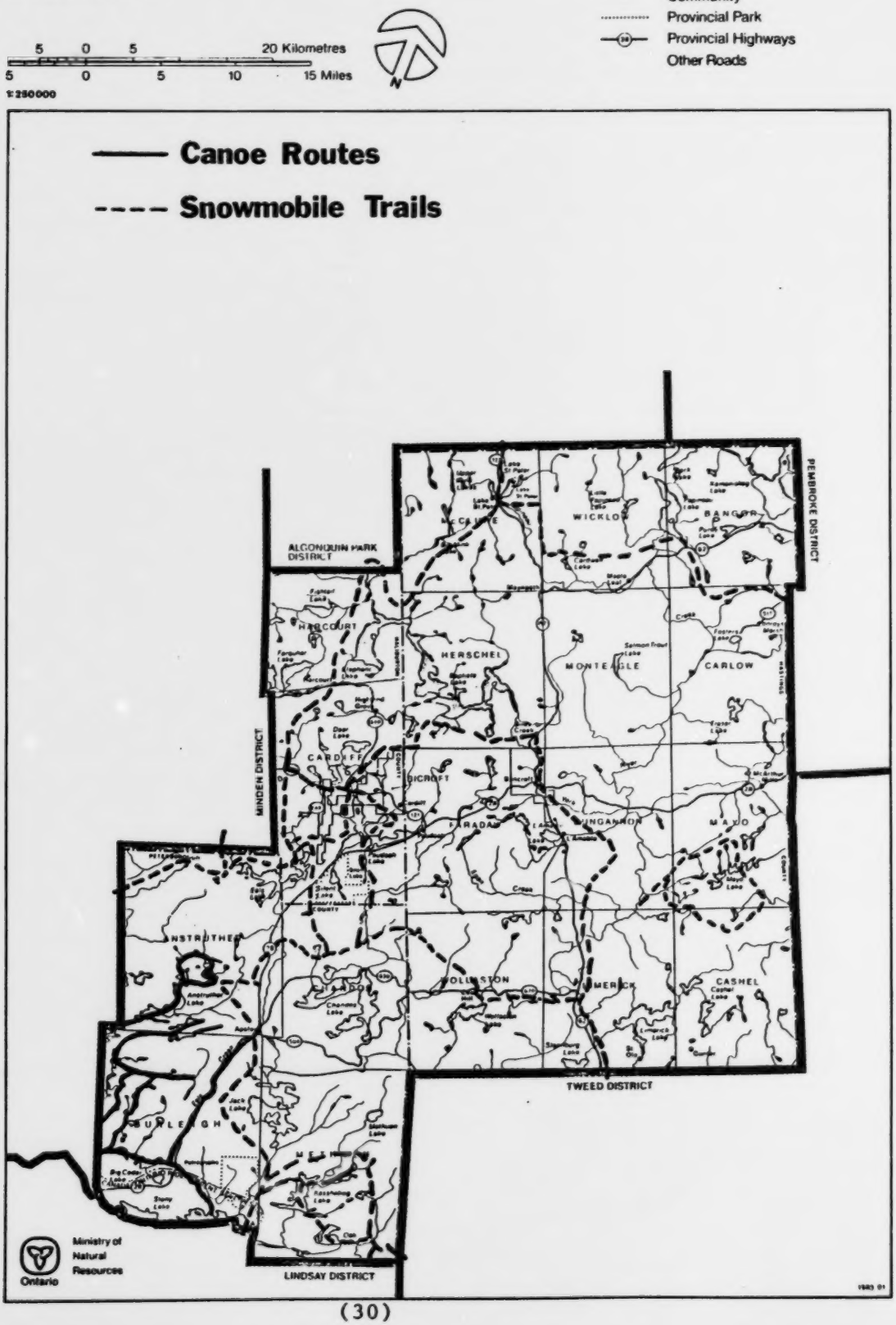
APPENDIX 2

LAND TENURE
BANCROFT
DISTRICT



APPENDIX 3

CANOE ROUTES/SNOWMOBILE TRAILS
BANCROFT DISTRICT

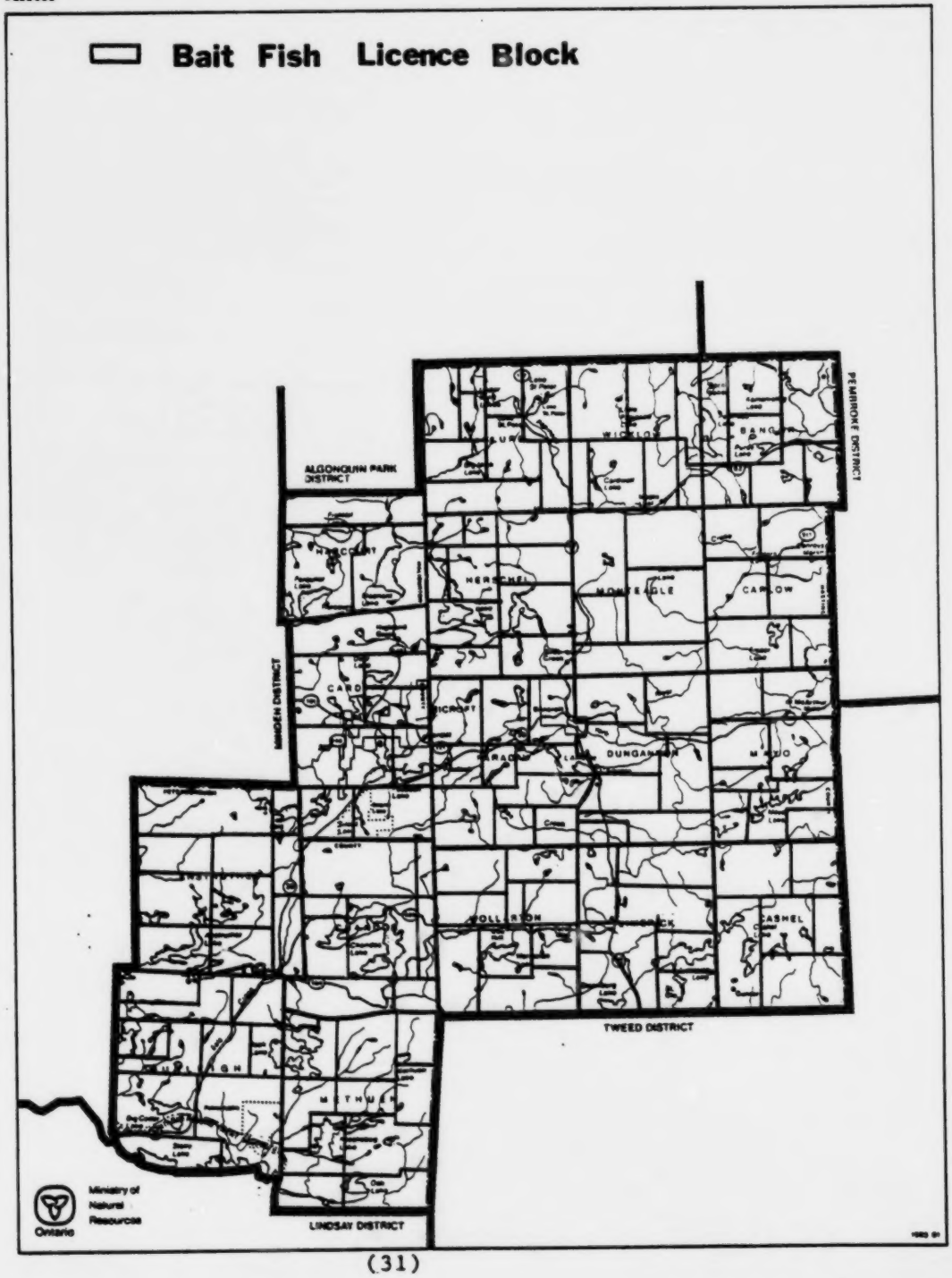


APPENDIX 4

BAIT FISH LICENCING SYSTEM
BANCROFT DISTRICT

M.N.R. Administrative District
Area included for District Planning
County, District
Village, Township
Community
Provincial Park
Provincial Highways
Other Roads

5 0 5 20 Kilometres
5 0 5 10 15 Miles

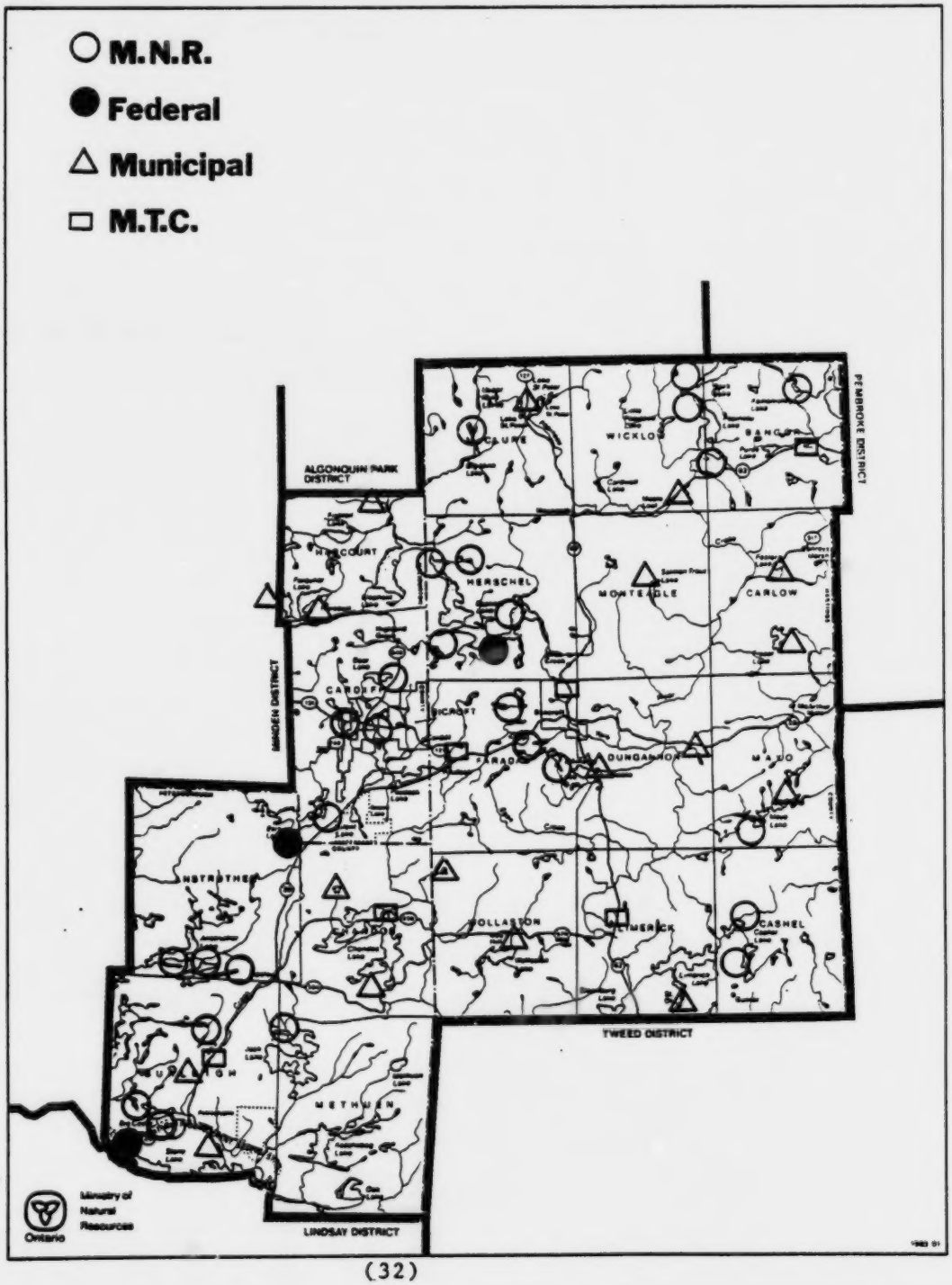


APPENDIX 5

ACCESS POINTS
BANCROFT DISTRICT

5 0 5 20 Kilometres
5 0 5 10 15 Miles
1:250000

M.N.R. Administrative District
Area included for District Planning
County, District
Village, Township
Community
Provincial Park
Provincial Highways
Other Roads



APPENDIX 6
SUMMARY OF FISHERIES MANAGEMENT PROGRAM

Summary Statement	Three Year Average (1983-1985) M.N.R.	S.E.P.A
Planning		
Management Planning		
- # of management plans prepared	3.0	-
Plan Input and Review		
- # of plans of other units (internal and external) reviewed	56.0	-
- # of plans to which input made	40.0	-
Inventory and Assessment		
District Habitat and Population Evaluation		
- # of netting studies	4.0	4.0
- # of stocked waters evaluated	3.0	5.0
- # of other population studies^^	6.6	18.3
- # of habitat evaluation studies	16.0	51.7
Aquatic Habitat Inventory		
- #/area of lakes surveyed	3.3/284 ha	2.7/232 ha
- #/length of streams surveyed	-	-
- #/area of lakes yet to be surveyed	524.0/3,859 ha	-
- #/length of streams yet to be surveyed	95.0/838.3 km	-
User Surveys		
- # of creel census programs completed	3.0	5.3
Assessment Units		
- # of assessment units	1.0	-
- # and type of projects - creel census	3.3	-
- limnology	4.0	-
- index netting	0.3	-

APPENDIX 6 - Continued	M.N.R.	S.E.P.A
Contaminant Monitoring		
- # of sites sampled for contaminants	2.0	0.3
- # of contaminant samples taken	37.3	10.0
Operations		
Enforcement		
- # of person days of enforcement	230.0	-
- # of commercial fishermen contacts	13.0	-
- # of angler contacts	1,600.0	-
- # of fisheries-related occurrences	60.0	-
- # of fisheries convictions	17.0	-
Population Management		
- # of lakes reclaimed	0.7	-
- # of water bodies stocked	68.7	-
- # of fish stocked by species:		-
(1) Lake Trout	57,674	-
(2) Brook Trout	58,600	-
(3) Rainbow Trout	19,490	-
(4) Splake	13,784	-
(5) Walleye###	1,110,379	-
(6) Muskellunge	318,667	-
- # of other population management projects completed	-	-
Habitat Management		
- #/area of spawning beds rehabilitated	4.3/296m	14.7/1,047m
- #/length of streams rehabilitated	-	2.0/1,633m
- #/area of spawning beds in need of rehabilitation	20.0+	-
- # and length of streams in need of rehabilitation	20.0+	-
- # of rehabilitation projects underway	10.0	-

APPENDIX 6 - Continued

	M.N.R.	S.E.P.★
Public Service		
Public Involvement and Extension	25.0	-
- # of extension visits	10.0	-
- # of public meetings attended or held	1.7	0.7
- # of brochures/booklets produced		
Community Fisheries Involvement Program	3.0	-
- # of projects completed	1.0	-
- # of projects underway		

★ S.E.P. - Special Employment Programs funded by Federal and/or Federal/Provincial government
★★ The population studies included are low-intensity studies.
★★★ includes walleye reared and released under C.F.I.P. projects

BANCROFT DISTRICT
FISHERIES MANAGEMENT PLAN
QUESTIONNAIRE

To assist you in selecting the management strategies and tactics you would prefer to see in the District Fisheries Management Plan, we have prepared the following questionnaire.

Please review the management strategies and tactics presented and indicate your preference or concerns. Your comments will assist us in refining the Fisheries Management Plan.

If you wish to add to or elaborate on any of the strategies or tactics, please do so on the reverse side of any of the questionnaire's pages. There is also space provided on the last page for any additional comments you wish to make.

Please provide your name and address so that we may notify you when the draft plan is prepared and invite you to review and comment upon that document.

NAME: _____

MAILING ADDRESS: _____

_____

_____

TELEPHONE: _____

The questionnaire should be returned within two (2) weeks of the open house to:

District Manager
MINISTRY OF NATURAL RESOURCES
P.O. Box 500
BANCROFT, Ontario
K0L 1C0

Please indicate your interest in the fisheries of Bancroft District.

_____ Angler

_____ Bait Fisherman

_____ Tourist Operator

_____ Other (explain)

PROBLEMS AND ISSUES:

Listed below are the seven major problems and issues which we feel must be addressed in the Fisheries Management Plan. Please number these problems and issues in what you consider to be the order of their importance. Also, in the space provided below, list any additional problems or issues that you feel are of concern in the management of the District's fisheries resource.

Problem/Issue	Your Order of Importance (1 through 7)
.Current and projected demand and harvest of coldwater species exceeds the district coldwater resource capabilities (allowable harvest).	_____
.At present, there are many underproducing waters in the district. To ensure that angler demand is met, these waters must be brought to full potential.	_____
.Several fish species existing in Bancroft District can provide additional angling opportunities but at present are underutilized.	_____
.The loss of valuable fish species and stocks is of great concern in the Bancroft District. To date, at least five (5) lake trout fisheries have been lost, and several more are threatened. Brook trout and walleye fisheries have also been lost but the extent of the loss is unknown.	_____
.Effective fisheries management is hampered to some degree by the lack of data base information and scientific knowledge. Many fisheries resource problems are complex and there is uncertainty as to the management approaches required to rectify certain resource problems.	_____

.Minimal public knowledge and involvement in fisheries management has resulted in a lack of public awareness. A better-informed public, taking a more active role in fisheries management, can lead to an increase in fish production and support for management programs. _____

.The Bancroft District is dependent upon hatchery-reared fish to support angler demand for coldwater species and to rehabilitate some warmwater fisheries; however, hatchery fish are costly, susceptible to disease and may not always be consistently available in the quantity, size and species required. Innovative ways of managing fisheries which reduce the dependence on provincial hatchery stock are required to help meet future needs. _____

Additional Problems/Issues: _____

Comments: _____

Please indicate your opinion of each of the following:

1. PROBLEM/ISSUE: Current and projected demand and harvest of coldwater species exceeds the district coldwater resource capabilities (allowable harvest)

	GOOD	UNSURE	POOR
Strategy			
(i) Disperse angling pressure to less-utilized lakes.	___	___	___
Tactics			
(a) Institute a news release campaign aimed at directing angling pressure to less-utilized lakes;	___	___	___
(b) Erect signs on underutilized fisheries informing the public of the game fish opportunities on the lake;	___	___	___
(c) Improve public access to remote under-utilized lakes.	___	___	___
Strategy			
(ii) Promote use of underutilized/less popular fish species.	___	___	___
Tactics			
(a) Encourage catch-and-kill angling for less popular species; e.g. lake herring, rock bass, etc.;	___	___	___
(b) Encourage and promote Youth Derbies for less popular species;	___	___	___
(c) Institute a public information campaign concerning angling techniques and recipes for less popular species;	___	___	___
(d) Educate public as to effects of less popular species on major game species;	___	___	___
(e) Provide or expand opportunities for alternative means of fishing for underutilized species; i.e. bow and arrow for coarse fish.	___	___	___

		GOOD	UNSURE	POOR
Strategy				
(iii)	Enhance existing fish populations.	___	___	___
	Tactics			
	(a) Identify and protect critical fish habitat; e.g. spawning beds, nursery areas, etc.;	___	___	___
	(b) Where possible, enhance/rehabilitate critical fish habitat;	___	___	___
	(c) Increase supplemental fish stocking where required;	___	___	___
	(d) Monitor and review lakeshore developmental proposals to ensure the fisheries needs are considered;	___	___	___
	(e) Promote fish culture projects by public interest groups through C.F.I.P.	___	___	___
Strategy				
(iv)	Regulate access.	___	___	___
	Tactics			
	(a) Discourage/restrict/control access to overharvested waters;	___	___	___
	(b) Open/improve access to underfished waters.	___	___	___
Strategy				
(v)	Control harvest to protect existing fish populations, where required.	___	___	___
	Tactics			
	(a) Alter angling seasons; e.g. shorten or close seasons;	___	___	___
	(b) Change daily possession limit;	___	___	___
	(c) Implement size limit approach; e.g. slot limit;	___	___	___
	(d) Implement gear restrictions; e.g. fly fishing only, one line only, no live bait etc.;	___	___	___
	(e) Designate selected areas as fish sanctuaries.	___	___	___

	GOOD	UNSURE	POOR
Strategy			
(vi) Create more coldwater fisheries.	___	___	___
Tactics			
(a) Convert marginal lake trout or brook trout lakes to splake;	___	___	___
(b) Create more put-and-take rainbow trout fisheries;	___	___	___
(c) Survey unknown waters to determine which have potential for coldwater management and then actively manage as coldwater fisheries;	___	___	___
(d) Chemically reclaim headwater lakes that have been lost to coarse fish.	___	___	___

2. PROBLEM/ISSUE: At present, there are many underproducing waters in the district. To ensure that angler demand is met, these waters must be brought to full potential.

Strategy			
(i) Protect and rehabilitate natural reproducing fish populations in underproducing waters;	___	___	___
Tactics			
(a) Monitor angler harvest levels and control harvest as necessary through appropriate regulations to ensure angler harvests do not jeopardize rehabilitation efforts;	___	___	___
(b) Determine factors limiting natural recruitment and work to eliminate or reduce these stresses; e.g. if water levels are inhibiting natural recruitment then negotiate with dam control agencies and appropriate user groups for a more appropriate timing of drawdown;	___	___	___
(c) Protect fisheries, as required, from additional access or development through plan input and review of development or resource extraction plans;	___	___	___

	GOOD	UNSURE	POOR
(d) Control any dredging or filling, etc. which will impair or destroy critical fish habitat;	____	____	____
(e) Stock hatchery-reared fish, as necessary, to maintain and improve self-sustaining fisheries.	____	____	____

Strategy

(ii) Utilize the fisheries production potential in presently barren/ underproducing waters. ____ ____ ____

Tactics

(a) Introduce warmwater fish species; e.g. bass, walleye, muskellunge, to create self-sustaining fisheries in all suitable waters; ____ ____ ____

(b) Stock rainbow trout, brook trout and/or splake to create put-and-take trout angling opportunities in all suitable barren/underproducing waters; ____ ____ ____

(c) Provide fisheries management advice and encourage establishment of sport fisheries in private waters. ____ ____ ____

Strategy

(iii) Rehabilitate degraded fish communities. ____ ____ ____

Tactics

(a) Encourage catch-and-kill fishing of less popular species which are inhibiting major game species; e.g. rock bass vs. smallmouth bass; ____ ____ ____

(b) Initiate coarse fish removal program; e.g. through C.F.I.P.; ____ ____ ____

(c) Restrict use of live bait in newly rehabilitated or stocked waters as required; ____ ____ ____

(d) Adjust angling season accordingly to ensure harvest does not jeopardize rehabilitation efforts; ____ ____ ____

	GOOD	UNSURE	POOR
(e) Chemically reclaim, where possible, waters with coarse fish problems and restock;	____	____	____
(f) Encourage fish culture projects through C.F.I.P.;	____	____	____
(g) Inform the public of the effects that less popular species have on fish communities.	____	____	____

Strategy

(iv) Protect, enhance and rehabilitate critical fish habitat.	____	____	____

Tactics

(a) Protect fish habitat by effectively enforcing existing legislation;	____	____	____
(b) Locate and identify degraded fish habitat;	____	____	____
(c) Rehabilitate degraded fish habitat through comprehensive M.N.R. or C.F.I.P. rehabilitation programs;	____	____	____
(d) Create new fisheries habitat;	____	____	____
(e) Continue to work with M.O.E. to monitor and react to water quality changes.	____	____	____

3. PROBLEM/ISSUE: Several fish species existing in Bancroft District can provide additional angling opportunities, but at present are underutilized.

	GOOD	UNSURE	POOR
Strategy			
(i) Promote use of underutilized species.	___	___	___
Tactics			
(a) Investigate and encourage innovative angling techniques for species such as lake herring, burbot, catfish, perch and suckers;	___	___	___
(b) Initiate a public information campaign concerning areas in which underutilized species are found, angling techniques and recipes;	___	___	___
(c) Encourage derbies for underutilized species to create the interest in these species;	___	___	___
(d) Open/improve access to underfished waters.	___	___	___

4. PROBLEM/ISSUE: The loss of valuable fish species and stocks is of great concern in the Bancroft District. To date, at least five (5) lake trout fisheries have been lost, and several more are threatened. Brook trout and walleye fisheries have also been lost but the extent of the loss is unknown.

	GOOD	UNSURE	POOR
Strategy			
(i) Prevent any further decline of key game fish populations or genetic stocks.	___	___	___
Tactics			
(a) Identify threatened species or genetic stocks;	___	___	___
(b) Improve assessment of causes resulting in population decline and implement management practices accordingly;	___	___	___
(c) Promote special regulations to restrict harvest; e.g. shorten season, slot size limit to protect brood stock where required;	___	___	___
(d) Encourage removal of any competing species impairing well-being of threatened stock;	___	___	___
(e) Reduce or eliminate unauthorized introductions of competing species by regulating fish transfers and educating the public as to the potential impacts of unauthorized introductions;	___	___	___
(f) Control any dredging or filling, etc., which will impair or destroy critical fish habitat;	___	___	___
(g) Stock hatchery-reared fish as necessary to prevent further decline of population;	___	___	___
(h) Increase effectiveness of fisheries enforcement of habitat protection and other regulatory controls.	___	___	___

		GOOD	UNSURE	POOR
Strategy				
(ii)	Maintain or improve all key game fish populations or communities and protect genetic stocks.	____	____	____
	Tactics			
	(a) Rehabilitate deteriorated habitat; i.e. spawning habitat, through M.N.R. and/or C.F.I.P. initiatives;	____	____	____
	(b) Monitor angler harvest levels and control harvest as necessary through appropriate regulations.	____	____	___
	(c) Stock hatchery reared fish as necessary to maintain and improve fisheries;	____	____	____
	(d) Control any dredging or filling which will impair or destroy critical fish habitat;	____	____	____
	(e) Increase effectiveness of fisheries enforcement of habitat protection and other regulatory controls.	____	____	____

5. PROBLEM/ISSUE: Effective fisheries management is hampered to some degree by the lack of data base information and scientific knowledge. Many fisheries resource problems are complex and there is uncertainty as to the management approaches required to rectify certain resource problems.

	GOOD	UNSURE	POOR
Strategy			
(i) Ensure research and assessment meets the needs of the District.	___	___	___
Tactics			
(a) Identify areas at district level where more information and research is needed;	___	___	___
(b) Encourage research projects by M.N.R. fisheries research branch and/or outside agencies, pertaining to specific problems common to many districts;	___	___	___
(c) Work with fisheries assessment units to assess management programs and to initiate experimental management projects.	___	___	___
Strategy			
(ii) Make effective use of new knowledge and technology.	___	___	___
Tactics			
(a) Access knowledge and information from other districts, assessment units and outside agencies;	___	___	___
(b) Initiate experimental management projects through C.F.I.P. or M.N.R.;	___	___	___
(c) Computerize the district fisheries data base to facilitate intelligence transfer.	___	___	___

		GOOD	UNSURE	POOR
Strategy				
(iii)	Expand local district data base.	____	____	____
	Tactics			
	(a) Initiate and maintain trend-through-time data on selected representative "type" lakes;	____	____	____
	(b) Organize and establish data base with respect to fish community type in order to match data provided by fisheries assessment units;	____	____	____
	(c) Conduct brief preliminary fisheries surveys on unknown waters and follow up with full aquatic habitat inventory surveys on those showing management potential;	____	____	____
	(d) Encourage anglers to submit volunteer creel forms.	____	____	____

6. PROBLEM/ISSUE: Minimal public knowledge and involvement in fisheries management has resulted in a lack of public awareness. A better-informed public, taking a more active role in fisheries management, can lead to an increase in fish production and support for management programs.

	GOOD	UNSURE	POOR
Strategy			
(i) Involve the public in key aspects of fisheries management.	____	____	____
Tactics			
(a) Encourage more C.F.I.P. projects;	____	____	____
(b) Encourage self-help programs and/or Volunteer Creel Surveys on lakes with active cottagers' associations;	____	____	____
(c) Issue news releases to local paper on key aspects of the District's fisheries programs;	____	____	____
(d) Institute regular meetings/open houses with key interest groups to update them on District fisheries programs.	____	____	____

	GOOD	UNSURE	POOR
Strategy			
(ii) Educate the public with regard to fisheries ecology and the effects of stresses on fisheries.	___	___	___
Tactics			
(a) Encourage local school boards to include fisheries studies in the science portion of the public school curriculum;	___	___	___
(b) Create and/or update fisheries information and education booklets;	___	___	___
(c) Utilize marinas, local sports shops, liquor/beer outlets and visitor services programs in provincial parks to distribute information booklets;	___	___	___
(d) Develop a comprehensive public information and education program;	___	___	___
(e) Set up educational displays at summer regattas.	___	___	___
Strategy			
(iii) Promote co-operation between user groups.	___	___	___
Tactics			
(a) Encourage regular meetings between interest groups to discuss and/or resolve issues and potential conflicts as required;	___	___	___
(b) Design and distribute information packages for different user groups to help them obtain a basic understanding of fisheries needs and problems.	___	___	___

7. PROBLEM/ISSUE: The Bancroft District is dependent on hatchery reared fish to support angler demand for coldwater species and to rehabilitate some warmwater fisheries; however, hatchery fish are costly, susceptible to disease and may not always be consistently available in the quantity, size and species required. Innovative ways of managing fisheries which reduce the dependence on provincial hatchery stock are required to help meet future needs.

	GOOD	UNSURE	POOR
Strategy			
(i) Optimize the use of hatchery-reared fish.	___	___	___
Tactics			
(a) Stock hatchery-reared fish where they will give the best returns to anglers and/or meet specific management goals; i.e. rehabilitation;	___	___	___
(b) Stock fish in area of lake where there is the least chance of predation;	___	___	___
(c) Stock fish at densities prescribed by regional stocking formulae;	___	___	___
(d) Assess results of stocking and adjust stocking program accordingly.	___	___	___
Strategy			
(ii) Promote fish culture projects by the public.	___	___	___
Tactics			
(a) Provide advice, expertise and monetary incentives to public interest groups to culture fish through C.F.I.P.;	___	___	___
(b) Encourage expansion of private hatchery system by purchasing more fish from private sector for put-and-take stocking.	___	___	___

	GOOD	UNSURE	POOR
Strategy			
(iii) Encourage innovative fish culture projects which will reduce culture costs and address the lack of appropriate supply issue.	____	____	____
Tactics			
(a) Experiment with new culture concepts; e.g. cage culture;	____	____	____
(b) Establish sanctuary donor lakes to act as reservoirs for use in adult transfers.	____	____	____
Strategy			
(iv) Promote and establish self-reproducing fisheries to reduce dependence upon hatchery-reared fish.	____	____	____
Tactics			
(a) Promote stocking of species that have the capability of establishing naturally reproducing populations;	____	____	____
(b) Monitor the status of naturally reproducing populations to ensure they remain healthy and stable;	____	____	____
(c) Identify, protect, rehabilitate and enhance critical spawning habitat;	____	____	____
(d) Monitor harvest levels on naturally reproducing fisheries and institute appropriate harvest restrictions when required.	____	____	____

		GOOD	UNSURE	POOR
Strategy				
(v)	Place the importance of fish stocking in the Bancroft District into perspective.	___	___	___
	Tactics			
	(a) Develop within the framework of existing guidelines a Bancroft District fish stocking policy;	___	___	___
	(b) Inform and educate the public as to the rationale of the District fish stocking program;	___	___	___
	(c) Annually print and distribute the fish stocking list for the previous year;	___	___	___
	(d) Maintain a four-year fish stocking plan;	___	___	___
	(e) Assess the results of the fish stocking plan.	___	___	___

COMMENTS: _____

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Thank you for your participation. We look forward to your continued involvement in the next phase of fisheries management plan preparation.

D. J. Vance
District Manager
Bancroft District
Ministry of Natural Resources
BANCROFT, Ontario
K0L 1C0

Telephone: 613/332-3940

FISHERIES RESOURCE BASE

BANCROFT DISTRICT

5 0 5 20 Kilometres

5 0 5 10 15 Miles

1: 250000

N

M.N.R. Administrative District

Area included for District Planning

County, District

Village, Township

Community

Provincial Park

Provincial Highways

Other Roads

LAKE TROUT

BROOK TROUT - STOCKED

BROOK TROUT - NATURAL

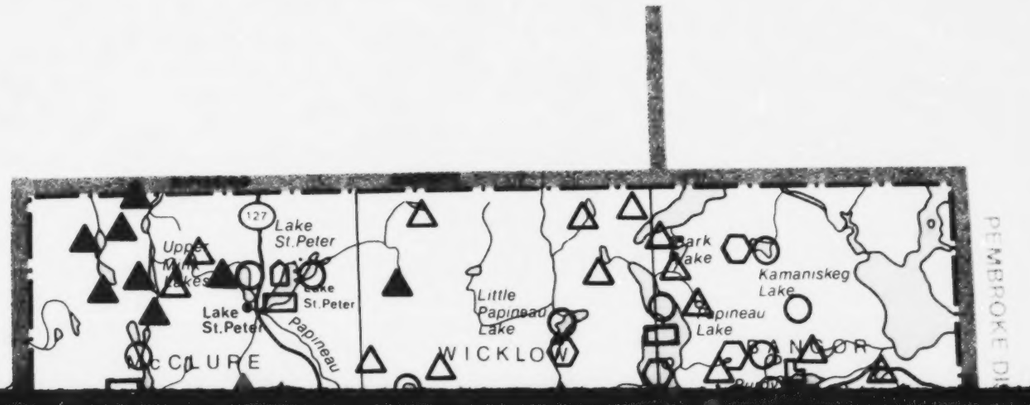
RAINBOW TROUT

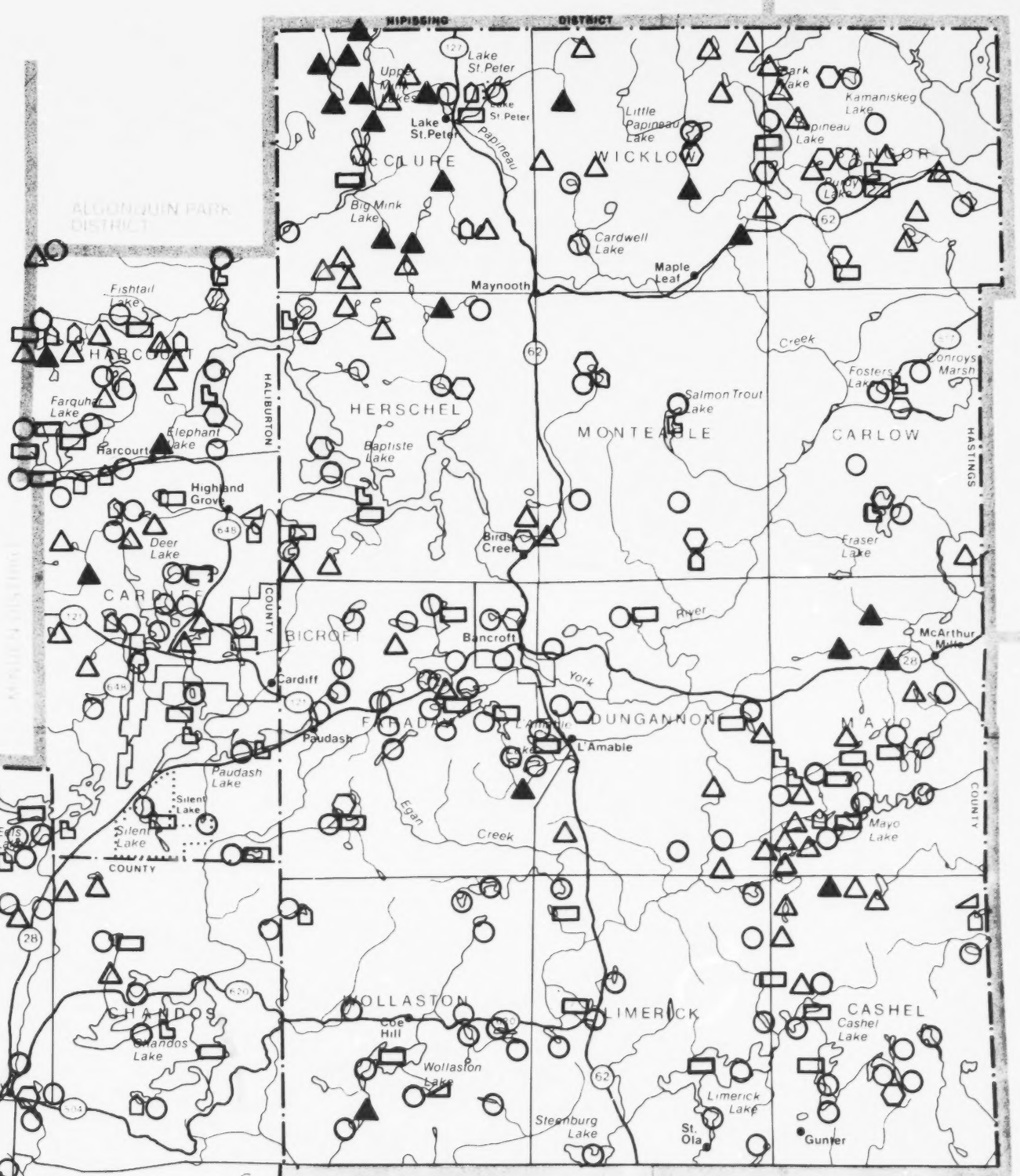
SPLAKE

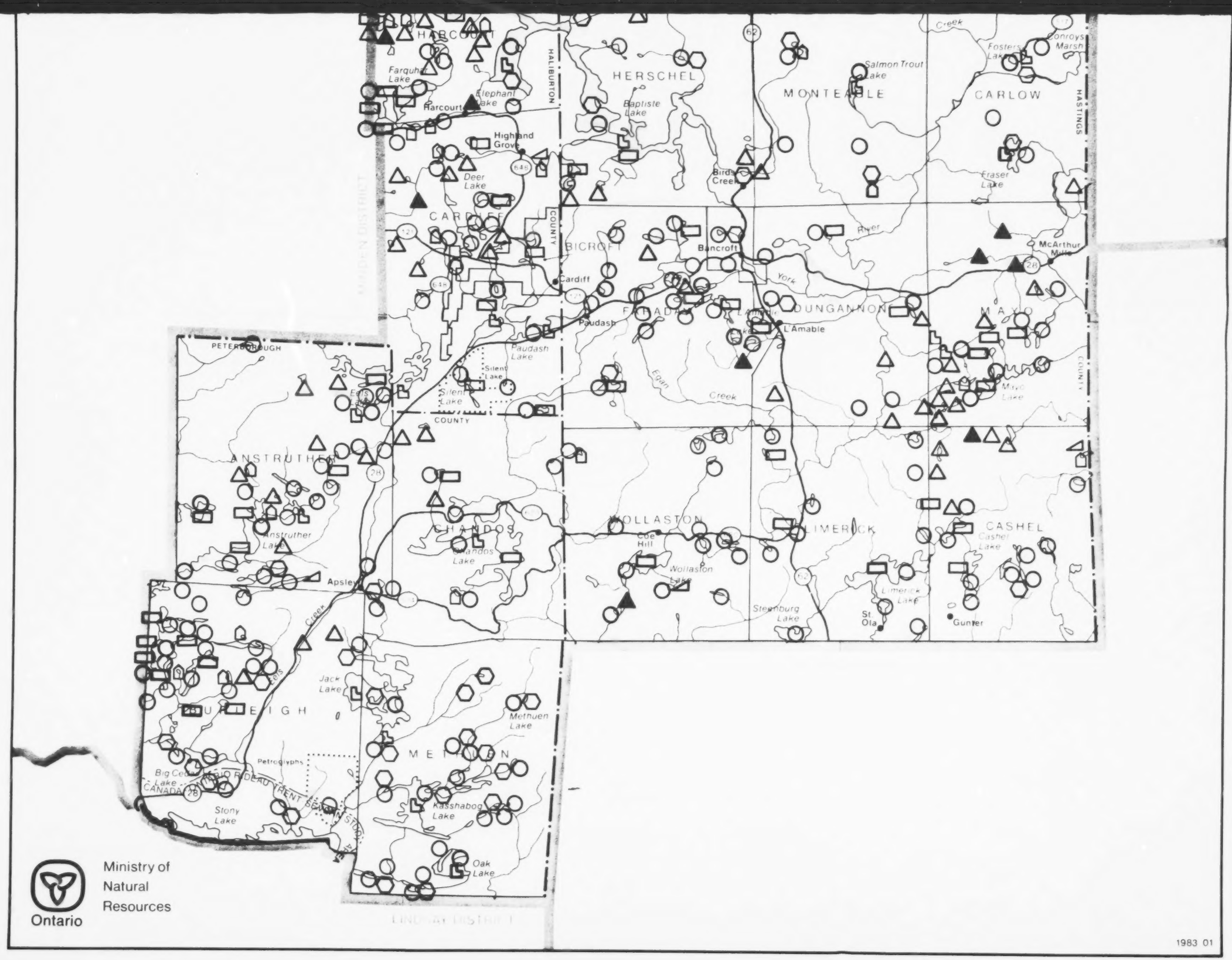
WALLEYE

BASS

MUSKELLUNGE / NORTHERN PIKE




NIPISSING DISTRICT
ALGONQUIN PARK DISTRICT
Lake St.Peter
Upper Lake St.Peter
Lake St.Peter
Papineau
Little Papineau Lake
Clark Lake
Kamaniskeg Lake
Papineau Lake
McCLURE
WICKLOW
Big Mink Lake
Cardwell Lake
Maple Leaf
Maynooth
Fishtail Lake
HARCOURT
HALIBURTON
Farquhar Lake
Elephant Lake
Harcourt
Highland Grove
HERSCHEL
Baptiste Lake
Salmon Trout Lake
MONTEAGLE
CARLOW
HASTINGS
Fosters Lake
Conroys Marsh
Creek
Deer Lake
Birds Creek
Fraser Lake
CARDIFF
COUNTY
BICROFT
Bancroft
Cardiff
River
McArthur Mills
York
Paudash
FARADAY
L'Amable
DUNGANNON
MAYO
Paudash Lake
Silent Lake
Egan Creek
Mayo Lake
PETERBOROUGH
COUNTY
ANSTRUTHER
Anstruther Lake
Apsley
CHANDOS
Chandos Lake
WOLLASTON
Doe Hill
Wollaston Lake
LIMERICK
CASHEL
Cashel Lake
Limerick Lake
Steenburg Lake
St. Ola
Gunter
Jack Lake
Eels Creek


HARCOURT
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CHANDOS
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Apsley
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Coe Hill
Wollaston Lake
LIMERICK
Stenburg Lake
Limerick Lake
St. Ola
CASHEL
Cashel Lake
Gunter
Jack Lake
Methuen Lake
Petroglyphs
Big Cedar Lake
CANADA
Stony Lake
Kasshabog Lake
Oak Lake
Ministry of Natural Resources
Ontario
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